DOCUMENT RESUME

ED 347 546 CS 213 440

AUTHOR Shen, Di
TITLE Why We Choose To Write the Way We Do in China.
PUB DATE Nov 91
NOTE 23p.; Paper presented at the Annual Meeting of the National Reading Conference (41st, Palm Springs, CA, December 3-7, 1991).
PUB TYPE Viewpoints (Opinion/Position Papers, Essays, etc.) (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Chinese; Cultural Context; Ethnocentrism; Foreign Countries; *Linguistics; *Phoneme Grapheme Correspondence; *Reading Comprehension; Romanization; *Written Language
IDENTIFIERS China; Historical Background; *Ideographs; Speaking Writing Relationship; Writing Contexts

ABSTRACT

The traditional theory of Chinese writing is that it is divorced from the language because as a non-alphabetic system, it cannot represent real speech. Chinese writing, however, is a functional linguistic system in its own right. Writing does not need to be totally dependent on speech, but can be related either to the phonological or the semantic aspect of the language. What counts is whether a writing system is compatible with the language, with its particular linguistic features, and whether it will meet the needs of the language's development. Examining the origins of written Chinese, formation of the characters, and language reform reveals how Chinese ideographs have had the ability to transcend dialect differences and communicate to all Chinese, providing China with a cultural unity that would be impossible with a phonetic system. Chinese writing is also feasible and indispensable in Chinese contexts. And although many linguists feel that the Chinese language is difficult, there is no evidence to support this, since Chinese people never feel it is difficult to learn and memorize thousands of characters. The argument against characters is based primarily on the traditional assumption that phonological mediation is the prerequisite for lexical identification and perception in reading. In fact, the high density of information actually promotes the process of stimulus recognition, and comprehension; hence it can be argued that reading in characters is more efficient and less time-consuming. (Twenty-nine references are attached.) (PRA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED347546

WHY WE CHOOSE TO WRITE THE WAY WE DO IN CHINA

by
Di Shen

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Di Shen
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC).

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

LRC
The University of Arizona
November, 1991

CS213440

BEST COPY AVAILABLE

WHY WE CHOOSE TO WRITE THE WAY WE DO IN CHINA

INTRODUCTION

For more than a century Chinese writing system has been a controversial issue in the fields of linguistics, psycholinguistics, sociolinguistics and education. The focus of the world-wide discussion is on the functional feasibility of Chinese characters, an ideographic writing system, as an effective means of information transmission. The prominent view is that Chinese writing as a non-alphabetic linguistic system cannot represent the real speech and is therefore divorced from the language. This argument is based on the traditional assumption of structural linguistics -- Writing is secondary to speech, and the existence of the former is dependent on the representation of the latter. It follows that Chinese writing must develop in the direction from an ideographic writing to a phonetic or alphabetic writing system.

The major purpose of the present paper is to argue against this traditional theory about Chinese writing system. Our basic assumption is that writing is a functional linguistic system in its own right. Instead of being totally dependent on the speech, writing could be related either with the phonological or the semantic aspect of the language. The form of a writing system, therefore, does not have to be phonetic in order to function properly. What counts here is whether a writing system is compatible with the language per se

and with its particular linguistic features, and especially whether it will meet the needs of the language development. Our conclusion is that Chinese writing, as a legitimate linguistic system, is not only compatible with the Chinese language, but also feasible and indispensable in Chinese context.

CHINESE SCRIPT: ITS PAST AND PRESENT

Origin of Chinese Written Language

Various speculations have been made about the origins of Chinese characters. The Chinese started recording events by knotting cords (结绳记事). That is, major events were recorded by tieing a big knot and a minor event a small knot. About 3000 B.C., a man, Tsang Chieh by name, is said to begin to invent characters. Nevertheless, many scholars contend Chinese writing system did not appear until the Shang Dynasty (16th-11th century B.C.). That is the shell and bone writing, inscriptions incised on bones and shells for the purpose of divination, which was discovered by archaeologists. Characters were also found on bronzes and stone artifacts produced in the Zhou Dynasty (11th Centruy-256 B.C.). During the Qin Dynasty (221-207 B.C.), Qin Shihuang (the first emperor of the Dynasty) unified the written language for the purpose of political unity and stability. Over the past two thousand years Chinese characters have almost remained unchanged. Apart from some changes in the shape, the fundamental system of Chinese writing is the same. The basic reason for this phenomenon is not because of the long history of feudalism in China, nor is it because of the large amount of mono-syllables in Ancient Chinese, but because of the fact that Chinese

characters of the stage meet the needs of the development of the Chinese language.

Generally speaking, Chinese characters have four salient features. First, most characters are square in shape. Second, characters are written from up to down, from left to right. Third, each character has its own special shape which can be understood by people from any regional dialect. Lastly, the handwriting of the characters is an art in its own right. It has been practiced for centuries.

It is hard to tell the total number of Chinese characters. The Kangxi Dictionary (compiled under the sponsorship of the Emperor Kangxi of the Chin Dynasty) published in 1716 collected altogether 49,000 characters, of which many are seldom used in everyday life. A college graduate can recognize, on the average, four to five thousand characters. However, any one with a sight vocabulary of one thousand or more is able to read newspapers (Huang et al. 1967).

Formation of Chinese Characters

Traditionally the formation of Chinese characters is analyzed into six principles, they are: (1) pictographic, (2) simple indicative, (3) compound indicative, (4) picto-phonetic, (5) phonetic loan, and (6) mutually explanatory principles. The first four of them are based on the composition of characters, and the last two on their use. Pictographic characters, as the term suggests, portrait or imitate roughly the objects they represent. Typical examples are: (door), (fire), (mouth), (well) etc. The second class is the simple indicative characters, i.e. characters consisting in

symbols indicative of the ideas represented. For instance, 上 (above), 下 (below). In the ancient Chinese, these characters were written as 二 (above) and 二 (below). The next category is the compound indicative principle: Characters are compound or multielement graphs whose meaning is derived by combining the meanings of their constituent parts. For example, 信 (letter, belief) is made up of 人 (man) and 言 (word), meaning a message or something that can be believed. And by combining 日 (sun) and 月 (moon), we make up another character 明 (bright) of which the meaning is indicated by its components. The fourth category, the pictographic characters, comprises the largest group, over eighty percent, of the Chinese vocabulary. There are two or more elements in such a character: the radical signifies the basic meaning and the phonetic element indicates the sound. 河 (river) is analyzed into two parts, i.e. 氵 (water) -- the meaning and 可 (may) --- the sound. The mutually explanatory characters fall into the fifth category. These are pairs of characters synonymous or similar in meaning. Hence they are employed to explain the meaning of each other. For instance, 老 (old age) and 考 (long life, aged) used to be considered synonyms and one was to used to explain the meaning of another in dictionaries. The last group is phonetic loan characters. The character 來 (come) is a phonetic loan from 來 (wheat). As it is difficult to represent the abstract meaning of "come" by a picture or a diagram, the character 來 , a pictograph for a kind of wheat was adopted to signify the homophonous character "come". Similarly, the character 求 (fur) was borrowed to represent the abstract meaning of 求 "entreat".

Language Reforms

Basically as a pictographic and ideographic language, Chinese written system has been under constant attack. It is accused as the root of all evils in China. It is stigmatized as being difficult to learn and cumbersome to use. Some linguists, especially those who believe that written language is secondary to speech, claim that it is a universal tendency for human languages to evolve from pictographic to ideographic, and finally to phonetic writing system. The alphabetic language is the most advanced and ideal language system. Consequently, numerous attempts have been made to phoneticize and simplify Chinese written language in the past few centuries. Except for a few alphabetic system, most proposals of romanization passed with scant notice.

The earliest effort can be traced back to the 16th century when the European missionaries in China developed phonetic spellings as an aid to learning the difficult ideographs. Following their suit, quite a few Chinese scholars tried to build up their own phonetic spelling systems to replace the ideographic characters. By the end of the Chin Dynasty (1616-1911), there were about twenty phonetic plans, some systems based on Chinese characters, some on short-hand symbols, and others on the Roman alphabet.

Since 1911, there have been several important language reforms sponsored by either the nationalist or the communist governments. The first of them was the National Phonetic Symbols (Zhuyin zimu) which was promulgated by the nationalist government in 1918. The objective of the system was to indicate the pronunciation of Mandarin. All the symbols in the phonetic system were elements derived from classic Chinese characters. Later on in

1926, another alphabetic system came into being. It was proposed by a group of Chinese linguists headed by Dr. Yuanren Zhao. The original goal of the National Romanization (Gwoyeu Romatzyh) was to promote a standard language and ultimately to replace Chinese characters. Although both systems are widely in use in Taiwan, their function is restricted in pronunciation indication.

In 1956, the Research Committee for Chinese writing Reform, sponsored by the communist government, put forward a plan for Chinese Phonetic Alphabet (Pinyin) and a plan for Chinese character simplification. Since then, thousands of characters have been simplified for three times (1956, 1964, and 1977). However, the third plan for simplification turned out to be a total failure for people in general refused to accept further simplification reforms. At the same time, the Romanization movement on the mainland was even less successful. The original ultimate goal of pinyin, which was to replace Chinese characters with Roman alphabets, met with intense resistance and severe criticism from the society, especially from the intellectual circles. Chinese characters, a precious legacy of the Chinese nation, can never be replaced and eradicated.

Language Diversity and Cultural Unity

For thousands of years Chinese written language has been a powerful tool for uniting over people and a powerful symbol of cultural unity. The aptness of written language as a symbol of cultural and political unity is facilitated by the use of a script that all practical purpose is independent of any particular phonetic manifestation of their regional dialects, allowing the Chinese to

look upon the Chinese language as being more uniform and unchanging than it actually was (Norman, 1988). It is because of this particular feature of Chinese writing system that makes it possible for Chinese people of mutually unintelligible dialects to communicate effectively with each other.

The Chinese, with a combined population of speakers numbering more than a billion, is one of the most diverse languages in the world. What is labelled as "Chinese language" is extremely diverse, "far more than any other single language in the world" (Ramsey, 1987). Chinese is composed of hundreds of regional dialects, which are often not mutually intelligible. What makes the Chinese language unique is the number and complexity of these dialects. The interconnections between the dialects are in fact as complicated as those which connect a family of languages, for example, the Romance languages -- French, Spanish, Italian, etc. The linguistic diversity between various dialects is so great that some linguists tend to define them as different languages. It is, of course, theoretically possible to create an alphabetic system for each dialect. This will obviously result in hundreds of alphabetic languages in China.

Based on both geographical and intelligibility principles, modern dialects in Chinese are usually classified at least into six major groups, namely, (1) Northern (or Mandarin), (2) Wu (South-East China around Shanghai), (3) Guangdong (or Cantonese), (4) Hunan (or Xiang), (5) Hakka, and (6) Min (Fujian area). Within each dialect group, the linguistic diversity may be great or small. Except for Northern dialect group, most dialects within a dialect group are not

mutually intelligible. Especially complex are the language situations in Taiwan and Hong Kong. As a result of the successful Mandarin education program in Taiwan, 94% of the population can speak Mandarin. Meanwhile, the majority of the native Taiwanese speak their own indigenous Min or Gaoshan dialects as well. However, the Mandarin spoken in Taiwan is slightly different from that (Putonghua) in mainland China in terms of pronunciation, structure, and particularly vocabulary. The native language in Hong Kong is the Cantonese standard (dialect of the city of Guangzhou) but has been heavily influenced by English. People there often speak a mixture of English and Chinese (almost a lexical pidgin).

Diversified as Chinese spoken language, the writing system is relatively uniform and steady. By using characters rather than grapho-phonemic relations, speakers of vastly different dialects are able to convey directly meaning through print. Newspapers, journals, magazines, books, almost anything printed in Chinese characters, can be well understood by literate people all over the country. Although character and print styles are different in Mainland (simplified characters, printed horizontally from left to right), and in Taiwan (traditional characters, vertical from right to left), and in Hong Kong (traditional character, horizontal from left to right), Chinese readers, wherever they come from, usually do not have much trouble making sense of the print. In short, Chinese characters, over the long history of Chinese civilization, have played an indispensable role of unifying the nation as a whole. As Ramsey (1987:18) put it, "The power of unification exerted within Chinese culture by Chinese written language should not be underestimated;

even the illiterate have always felt its influence." This is not to say that written Chinese is the sole factor of unity but a major contributor. Chinese ideographs have the ability to transcend dialect differences and communicate directly to speakers of tongues as varied as Mandarin, Cantonese, and some would even suggest, Japanese.

CHINESE WRITING SYSTEM: ITS FEASIBILITY AND INDISPENSABILITY

Role of Written Language

The written language is not an auditory but a visual language which is a communication tool that transcends time and space. We write to express ourselves or to record events and the written product could be understood by other members of the language community. Chinese writing system possesses all these fundamental functions. Besides, the Chinese character system breaks the barriers caused by dialect differences which often lead to communication break-down in oral channel. Chinese writing system possesses all these fundamental functions. Moreover, thanks to the relative stability of the characters, we are able to understand the rich heritage produced thousands of years ago. Even the Japanese can read some old Chinese texts. A common language like this ensures nationwide communication in a diverse society and the unification of the country. Considering the diverse linguistic situation in China, this significant contribution could have hardly been achieved if Chinese were an alphabetic language.

Speech-Script Consistency

As a matter of fact, no natural human language can keep a complete speech-script consistency in the long run, by which a person seeing the graphics can immediately tell the pronunciation of the word. Several reasons can be addressed to this linguistic phenomenon. Firstly, written language is generally more stable than speech. An alphabetic language with a supposedly full speech-script uniformity at one time will become less so through time. Next, a single word form may have different pronunciations in different language-use contexts. The word "produce", for instance, is pronounced differently when it is used as a noun and as a verb. Thirdly, alphabetic languages have phonetic variations too. The same word may be pronounced differently by people coming from different social backgrounds or regional areas. For example, American mainstream English sounds different from Black American English, and different from British or Australian English as well.

In fact, there is no need for the writing system to be totally dependent on or secondary to the speech. It functions as a linguistic system in its own right. Language has two aspects, sound and meaning. The writing system may be related either with the sound or meaning. When writing is meaning-related, it will increase its power of pictorialness and becomes an independent unity relatively free of time and space. In other words, it is more steady, less affected by the objective conditions like the change of pronunciation, language merger, dialect split-up and foreign borrowings, etc. All these advantages of non-alphabetic languages are found in Chinese writing system.

Compatibility of Characters to Chinese Language

A writing system cannot be judged good or bad, advanced or backward, merely in terms of its form, i.e. alphabetic or non-alphabetic. What is fundamentally important is whether a writing system conforms to the language it represents and to the linguistic context where it is used. The form of Chinese scripts is fully compatible with Chinese language which is noninflectional and mono-syllabic by nature (Shen 1985). However, Chinese characters, if applied to an inflectional language, would become poor and inefficient.

As a noninflectional language, the morphological, syntactical and semantic information is usually implicit in the linear flow of vocabulary items in a sentence. To understand a Chinese sentence, the position of each word in a sentence and its relation to other constituents need to be taken into consideration. For the lack of grammatical information in the word form, Chinese characters, as the symbol of symbols, have to follow the pictographic and ideographic principles of word-formation in order to increase the information load of a character for compensation.

Chinese is noted for its large number of homophones in the language. There are only 21 initials (initial consonants in a syllable), 38 finals (ending vowels or vowel and consonant combinations), and four basic tones in Chinese Mandarin. According to phonological rules, the initials and finals may be combined to form over four hundred syllables, or at most one thousand and three hundred syllables with the modification of tones. To represent one of the richest and the most advanced languages in the world, the

limited number of possible syllables in Chinese must result in a large proportion of homophones. In 45,200 words entries in a contemporary Chinese dictionary, the homophones take up 38.6%. Some syllables, such as ji and xi, have more than a hundred homophones. The large percentage of homophones in Chinese makes it harder rather than easier to recognize the meaning of words when alphabetized. To avoid confusion, the graphemes must be highly distinguishable because many sounds are not easily distinguishable in certain dialect areas. Chinese characters have this special attribute. Thanks to the pictographic and ideographic nature of the characters, Chinese language is least affected by the little information from the lexical phonological forms as a result of the large percentage homophones. And these homophones present an extremely great obstacle for the romanization of Chinese characters.

Character Learning

Chinese writing system is often condemned to be "the most difficult written language of the entire world... even the smartest people require at least ten years of very hard work" (Lu,1892). Qian Xuangtong, an advocate for Chinese romanization, claimed that Chinese characters were not suitable to the scientific twentieth century. They were not compatible with modern life. "The crimes of Chinese characters include being difficult to read and write. They prevent the popularization of education and the spreading of knowledge" (1923). All these charges against Chinese writing are subjective and groundless.

Various studies have shown that Chinese characters, like any other written languages, are not difficult to learn if it is learned within its own social and language-using contexts. Moreover, learning characters was demonstrated to be easier than Chinese pinyin (Zheng 1979, 1980, 1982), than Japanese syllabary system (Steinberg et al., 1978), and even easier than alphabetic languages like English (Rozin et al., 1971).

Chinese characters may appear to be difficult to learn to nonnative speakers because of their numerous strokes and complicated structures. However, Chinese people, especially children, never feel it is difficult to learn and memorize thousands of characters. To them language learning never seems to be a burden. We are living in a literate society where we can read and use printed matters in characters everywhere.

The construction of strokes in a character actually is not as complicated as it appears to be. The structure of Chinese characters is highly redundant and symmetrical. That is, if you know the first few strokes in a character, you can well anticipate the rest of the strokes in it. And the chances are usually very good. With the symmetrical construction of characters, such as 十, 林, 人, 中, the learning and recognition of characters will be eased to a considerable extent.

What is more, the structures of Chinese characters facilitate access to meaning and pronunciation. Many a character is a combination of three elements: sound, shape, and meaning. You can often guess the meaning of an unfamiliar character from its radical (e.g.妇, 讲), the sound from its phonetic element (e.g.论, 坪).

It is true that characters with more strokes take longer to write, but there is no evidence that they are more difficult to learn. On the contrary, it is easier for children to learn characters with more strokes than fewer, because characters with fewer strokes are less distinguishable, provide fewer clues for the processing of information.

Character Perception and Comprehension

The arguments against Chinese characters as a non-alphabetic language is primarily based on the traditional assumption of lexical access in reading: the phonological representation is the only mode of internal representation used for lexical access during reading (Rubenstein et al., 1971, and Gough, 1972). That is the semantic information of a printed word can only be obtained by turning the orthographical patterning of a word into its phonological representation (its pronunciation corresponding to the speech). The phonological representation is the only possible mode for gaining access to the word's lexical entry, and subsequently to its meaning. In other words, phonological mediation is the prerequisite for lexical identification and perception in reading. If this assumption were true, then it would be very difficult, if not totally impossible, to read and understand Chinese characters, which present little phonological information in the printed form.

More recent theorists in psycholinguistics have argued against any use of phonological representations in word identification or have designed models left no role for phonological mediation (Aaronson & Ferres, 1983; Paap, Newsome, McDonald & Schvaneveldt,

1982; Smith, 1971). Inner speech or phonological recoding is demonstrably slower than even the longest estimates of reading comprehension time. Besides, there is a large proportion of irregular words in English, for instance, whose correct phonological representation could hardly be derived merely from the grapho-phonemic rules before lexical access. In addition, the existence of a substantial number of ideographical symbols in English (like numerals, punctuation marks, abbreviations, initialisms and acronyms) does not present obvious problems in word identification and comprehension.

The mode of internal presentation, phonological or orthographical, for lexical access during silent reading has been a topic of empirical investigation since before the turn of the century. To date, research has generated very contradictory findings. To overcome the difficulty in explanation, interest has shifted to a family of dual access, or dual route, models in which both phonological mediation and orthographical representations are used in parallel (Coltheart, 1978; Patterson & Coltheart, 1987; Rumelhart & McClelland, 1982). Other models argue that phonological representations may only be used during the post-access process (Baddley & Lewis, 1981; Besner et al., 1981; and Levy, 1978). In short, the role of orthographical representation as the mode of lexical access seems to be well established. The role of phonological representation, in contrast, is hotly disputed, even in the lexical access of alphabetic languages like English.

As an ideographical written language, the word identification of square characters in reading comprehension has to be mainly

dependent on the orthographical information of the script. In other words, the meaning of a character may be obtained directly from its configuration, not much dependent on its pronunciation. If phonological information is ever required for certain purposes like reading aloud, it may come from the lexical entry after the appropriate lexical access.

Suppose the orthographical representation in word identification is the major mode, if not the only mode, for lexical access, the Chinese writing system has a clear advantage over alphabetic languages in its perception in reading comprehension. The orthographic information represented by various shapes of characters could convey complex relationships or configurations more rapidly than long , strung-out alphabetic sentences (Watts, 1975). Its high density of information and its nature of non-inflection will presemably promote and facilitate the mental process of stimulus recognition. Hence the reading in characters is likely to be more efficient and less time consuming.

Indispensability of Characters

Whether in the ancient past or at present, Chinese characters have obviously played an important role in Chinese culture and society. Thanks to this excellent medium, not only are the Chinese able to keep in contact with each other in spite of all the various dialects, but they are also capable of communicating intimately with the Chinese of past ages.

Chinese writing is closely related to Chinese culture, too. The Chinese script is itself the symbol of Chinese culture. The shape of

a character often reflects the social system, thought and intellectual standard of the time when the character was coined (Wang, 1974). Hence, the Chinese script might be seen as the crystallization of Chinese culture. Take the character 筆 (pen) for an example. From its configuration, we can obtain a picture of the ancient stationary. It was a pointed instrument (聿) to carve characters on bamboo (竹). Pieces of bamboo are stringed together to form a book (冊).

In one of his most popular works, the great sinologist Karlgren extolled the virtues of Chinese script as an indispensable medium:"In the peculiar relation between the spoken and the written language in China, and above all in the nature of the latter as being a language that can be understood by the eye but not the ear alone, we have the explanation of the strange fact that the peculiar Chinese script is indispensable. . . The Chinese script is so wonderfully well adapted to the linguistic conditions of China that it is indispensable; the day the Chinese discard it they will surrender the very foundation of their culture" (Karlgren, 1929:39).

CONCLUSION

As we attempt to show here, the Chinese writing system is superbly, functionally adapted to the needs of an extremely diverse group of peoples. In development for some five millennia, it has also become a resource of cultural identity. Our guiding assumption is that a language system -- either spoken or written -- evolves to fill the functional needs of its people. When Qin Shihuang unified the

written language as part of a series of 'Legalist' reforms in the 3rd century B.C., he did so with the intention of unifying a diverse group of fractitious states after 500 years endemic civil warfare. 2300 years later, All Han peoples share this unity from the mountains of southern border province Yunnan to the Ordos Plateau of northern China.

With reference to the above, charges such as the non-coincidence with spoken language phonology are flawed not only in their specificity but in their basic assumption as well. This is the assumption that it is an universally desirable quality that written language have an orthography which "mirrors" a spoken language. We respond to these critics by challenging the unexamined nature of this assumption with a question prefaced by a short statement:

In Europe, the continuance of commerce and interpolity relations requires not merely bi-, tri-, or even multilingualism but bi-, tri-, or MULTILITERACY as well. How would the social and political nature of Europe be different if this relative 'inefficiency' had not developed?

We suggest that the development of a phonologically coincident orthography could be viewed as a handicap from the perspective of the oldest continuous (unified) civilization on Earth. Should this perceived 'handicap' prompt a suggestion that Europeans then adapt a more 'efficient' ideographic written language, denying 1000 years of their own development? Can we then conclude that such an analogous presumption by some European or European-educated scholars betrays the unexamined provincialism of their view of the unilinear evolution of written language? We think so.

MAIN REFERENCES

Aaronson, D. & Ferres, S. (1983). "A model for coding lexical categories during reading." *Journal of Experimental Psychology: Human Perception and Performance*, 9, 700-725.

Baddeley, A.D. & Lewis, V. (1981). "The role of subvocalization in reading." *Quarterly Journal of Experimental Psychology,* 33A, 439-454.

Besner, D. Davies, J., & Daniels, S. (1981) "Reading for meaning: The effects of concurrent articulation." *Quarterly Journal of Experimental Psychology.* 33A, 415-437.

Coltheart, M. (1978). "Lexical access in simple reading tasks." In: G. Underwood (ed.), *Strategies of Information Processing.* London: Academic Press.

DeFrancis, John (1984). *The Chinese Language: Facts and Fantasy.* Honolulu: University of Hawaii Press.

Gough, P. (1972). "One second of reading." In: J.P. Kavanagh and I.G. Mattingly (eds.) *Language by Eye and by Ear.* MIT Press, Cambridge, Massachusetts.

Huang, Parker Po-fei; Chang, Richard I. Feng; Chao, Howard H.; Hsia, Linda T. & Wang, Yen-chan (1967). *Twenty Lectures on Chinese Culture.* New Haven: Yale University Press.

Karlgren, Bernhard (1929). *Sound and Symbol in Chinese.* London.

Ko, Rebecca Hon (1987). *Chinese Calligraphy.* New York: Abbeville Press.

Lu, Guangzhang (1892). *Chin's First Phonetic Words.*

Levy, B.A. (1978). "Speech processing during reading." In: A.M. Lesgold, J.W. Pelligrino, S.D. Fokkema, & R. Glaser (eds.) *Cogintive Psychology and Instruction.* New York: Pleum Press.

Norman, Jerry (1988). *Chinese.* Cambridge: Cambridge University Press.

Paap, K.P., Newsome, S.L., McDonald, J.E., & Schvaneveldt, R.W. (1982). "An activation-verification model for letter and word

recognition: The word-superiority effect," *Psychological Review*, 89, 573-594.

Patterson, K. & Coltheart, V. (1987). "Phonological processes in reading." In: Max Coltheart (ed.) *Attention and Performance XII: The Psychology of Reading*. Hillsdale, NJ: Lawrence Erlaum Associates.

Qian, Xuantong (1923). "The revolution of Chinese character." *Language Monthly*.

Ramsey, Robert (1987). *The Language of China*. Princeton: Princeton University Press.

Rozin, Paul; Poritsky, Susan & Sotsky, Raina (1971). "American children with reading problems can easily learn to read English represented by Chinese characters." *Science*. 171:1264-1267, 173:190-191.

Rubenstein, H., Lewis, S.S., & Rubenstein, M.A. (1971). "Evidence for phonemic recoding in visual word recognition." *Journal of Verbal Learning and Verbal Behavior*, 10, 645-675.

Rumelhart, D.E. & McClelland, J.L. (1982). "An interactive activation model of context effects in letter perception: Part 2. The Contextual enhancement effect and some tests and extensions of the model." *Psychological Review*, 89, 60-94.

Seybolt, Peter J. & Chiang, Gregory Kuei-Ke (1978). *Language Reform in China*. New York: M.E. Sharpe, Inc.

Shen, Xiaolong (1985). "Scientificness and nationality of Chinese language reform." *Academic Studies*, No.10.

Smith, F. (1971). *Understanding Reading: A Psycholinguistic Analysis of Reading and Learning to Read*. New York: Holt, Rinehart & Winston.

Steinberg, D.D. & Yamada, Jun (1978). "Are whole word Kanji easier to learn than syllable Kana?" *Reading Research Quarterly*, (1978-79),1,88-99.

Wang, Xuewen (1974). *Criticism of Communist Language Reform*. Taibei: Dongxing Publishing House.

Zeng, Xingchu (1979)"On early childhood learning." *Shanghai Normal University Journal*. Jan. 17-23.

_____ (1980)."A problem in preschool-- From easy to hard or vice versa?" *Educational Research.* April.

_____ (1982)."A dictation test comparing Chinese characters and pinyin."

_____ (1985)."An appeal for justice for Chinese characters." *Chinese Education.*